

Mapping Transnational Rights of Nature Networks & Laws: New Global Governance Structures for More Sustainable Development

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Since 2006, governments around the world have adopted legal provisions recognizing Nature as a subject with inherent rights (e.g., to exist, regenerate vital cycles, and be restored when damaged). Initiatives to enact Rights of Nature (RoN) legal provisions are also underway in international policy spheres, including the United Nations Harmony with Nature Programme,¹ the draft Universal Declaration of the Rights of Nature,² and the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES).³ Efforts to enact Earth law domestically and internationally are driven by transnational networks of activists, NGOs, lawyers, scientists, policymakers and others who reject dominant anthropocentric development norms and practices. Arguing that human wellbeing is dependent on the wellbeing of Earth's ecosystems, they advocate a new approach to sustainable development that prioritizes sustaining ecosystem functioning over increased consumption, and that places the wellbeing of the planet as a whole ahead of human self-interest alone.

Much is written on the moral and legal philosophy behind RoN (e.g., Berry 1999, 2002; Biggs, Goldtooth & Orielle Lake 2017; Cullinan 2011; Hosken 2019; Stone 1972). Yet, few if any studies have analyzed the transnational networked governance structures that have emerged to promote RoN legal provisions, and the resulting expansion of RoN legal provisions worldwide. This paper fills this gap in two ways. First, it analyzes an original database of RoN legal provisions worldwide (the most comprehensive to date) to show their global expansion over the last decade. Second, it maps and analyzes the various transnational networks that are spurring a recent dramatic expansion of RoN legal provisions. Using original datasets of network ties and member attributes, the paper employs social network analysis to understand the structure of existing RoN networks as well as the attributes and relationship among various RoN organizations.⁴

Expansion of RoN Legal Provisions Worldwide

One motivation for studying transnational RoN networks was to understand the global governance structures propelling a dramatic increase in RoN legal provisions worldwide in recent years. To understand the full scope of the expansion, my research team and I constructed an original database of RoN legal provisions (i.e., laws, court rulings, and regulatory policies

¹ <http://www.harmonywithnatureun.org>.

² <https://therightsofnature.org/universal-declaration/>.

³ <https://ipbes.net/policy-support/tools-instruments/rights-nature-ron>.

⁴ I thank Pamela Martin and Adam Chamberlain for their help in constructing the survey used in this project, and Katya Tkhostova and Anna Jernigan for their research support and help constructing the resulting datasets. This project was made possible with generous support from the Rockefeller Brothers Fund.

recognizing RoN). While several RoN organizations keep lists of RoN laws, most notably the United Nations Harmony With Nature Programme, these rely on self-reporting and so are incomplete.⁵ In addition to compiling legal provisions from various organizational lists, we also documented additional cases through extensive research of news articles and press reports. As of November 2019, we documented 138 existing rights of nature legal provisions worldwide. These only include adopted laws and court rulings recognizing rights of nature. They do not include failed attempts to establish laws or lawsuits where court rulings did not recognize rights of nature. We also identified an additional 40 pending cases (i.e., proposed rights of nature laws and lawsuits invoking rights of nature whose outcomes are not yet determined). Consequently, there were 178 existing and pending RoN legal provisions at the end of 2019.

The following tables present information on existing and pending RoN legal provisions. I include pending cases because I believe this provides a clearer picture of trends regarding efforts to implement RoN, which in turn provides an indication of the results of network expansion and mobilization discussed in subsequent sections.

Table 1: Cases by Level

Level	Number	Percent
Local	114	64%
National	58	33%
Tribal	5	2.5%
International	1	0.5%

The majority (64%) of RoN legal provisions exist at the local (subnational) level. As Table 2 below shows, the vast majority of these exist in the U.S. as a result of the work of organizations like the Community Environmental Legal Defense Fund (CELDF) and the Earth Law Center. Nevertheless, local RoN legal provisions are emerging in a growing number of countries in Europe, Latin America, and Asia (see Table 2).

Table 2: Countries With Existing or Pending Cases of Local RoN Legal Provisions

Country	Number of Cases
Argentina	4
Australia	5
Belgium	1
Brazil	6
Canada	2
Colombia	6
France	1
India	4
Mexico	3
Netherlands	1
Trinidad & Tobago	1
U.S.A.	79
United Kingdom	1
Total	114

⁵ E.g., see <http://www.harmonywithnatureun.org/rightsOfNature/>.

The larger number of local provisions is understandable given the larger number of local districts available to contest rights of nature. It likely also reflects the high degree of grassroots organizing happening around the topic. It may also reflect the belief among many advocates that in some countries the political opportunity structure for pursuing RoN is closed at the national level.

Most of the national-level legal provisions (35 of 58) are laws and court rulings in Ecuador, reflecting the strengthening of RoN jurisprudence in that country over the last decade (Kauffman and Martin 2017). However, the last several years have seen an explosion of national-level laws being proposed (and in some cases adopted) in countries around the world (see Table 3). Again, the data shows a growth in activity in Latin America, Europe, Africa, and South Asia. In addition, there are five instances in which Native American groups in the U.S. have recognized rights of nature in tribal law.⁶

Table 3: Countries with Existing or Pending National RoN Legal Provisions

Country	Number
Argentina	1
Bangladesh	1
Bolivia	2
Bosnia	1
Brazil	2
Chile	1
Colombia	3
Ecuador	35
El Salvador	1
France	1
Nepal	1
New Zealand	3
Nigeria	1
Pakistan	1
Serbia	1
Sweden	1
Uganda	1
Uruguay	1
Total	58

Table 4 shows the number of cases that were adopted by year, as well as the number of pending proposals. The final column presents the total number of legal provisions (adopted and pending) per year. The data show a huge explosion in the number of RoN legal provisions being adopted and proposed between 2017-2019.

⁶ These include the Ho-Chunk, Ponca, Navajo, White Earth Band of the Ojibwe, and Yurok Nations in the U.S.

Table 4: Number of Legal Provisions By Year

Year	Number of Adopted Provisions	Number of Ongoing Provisions	Total (Adopted + Ongoing)
2006	4		4
2007	4		4
2008	9		9
2009	6		6
2010	8		8
2011	11		11
2012	10		10
2013	9		9
2014	13		13
2015	9	1	10
2016	8		8
2017	12	2	14
2018	11	15	26
2019	24	22	46

Before 2014, all of the legal provisions occurred within three countries: the U.S., Ecuador and Bolivia. The data in Table 4 for those years essentially shows the expansion of CELDF’s network in the US (discussed below) and the strengthening of RoN jurisprudence in Ecuador through the courts (i.e., judges increasingly recognize and apply RoN in their rulings). In 2014 and 2015 we see the addition of two additional countries with RoN legal provisions: Argentina and New Zealand. However, the number of countries with RoN legal provisions is still quite small at that point. In 2016, Colombia and France are added to the list. But beginning in 2017, the number of countries where RoN legal provisions are adopted or proposed exploded. This can be seen in Table 5, which shows the cumulative number of countries with existing or proposed RoN legal provisions by year. By mid-2019, 28 countries had existing or pending RoN legal provisions.

Table 5: Cumulative Number of Countries with Existing or Pending RoN Legal Provisions

Year	Number of Countries (Cumulative)
2006	1
2007	1
2008	2
2009	2
2010	3
2011	3
2012	3
2013	3
2014	5
2015	5
2016	7
2017	13
2018	19
2019	28

As Table 5 shows, there was a relatively modest, slow, and gradual increase in the number of countries where RoN legal provisions were proposed and adopted in the first decade (2006-2016). However, beginning in 2017 there was a dramatic expansion in the number of countries where RoN legal provisions are proposed, and in many cases adopted. Moreover, as the regional data above shows, these countries cover every continent of the globe.

I believe it is likely that this sudden and dramatic increase reflects the strengthening of transnational RoN networks following a decade of network activation and mobilization. This is what led me to conduct a systematic analysis of transnational RoN networks in 2019, presented below. The network data admittedly provides a snapshot in time, and does not show how networks have expanded over time. Yet, it provides the best available image of the informal global governance networks that existed in mid-to-late 2019 at the time when RoN legal provisions were dramatically expanding around the globe. To place the network data in context, I supplement my network analysis with qualitative analysis based on extensive research I have conducted on the RoN movement over the last five years. This includes hundreds of interviews with RoN activists, NGOs, lawyers, judges, and policymakers; on-the-ground fieldwork in Bolivia, Ecuador, India, New Zealand, and the U.S., and participant observation research conducted at United Nations meetings, global RoN Tribunals, numerous workshops and symposiums on RoN, and Global Alliance for the Rights of Nature strategy sessions. I am also a member of the United Nations Knowledge Network on Harmony with Nature, one of the main hubs in the global RoN network.

Network Analysis Methodology

My network analysis uses two original databases created during 2019. An attribute dataset identifies individuals and organizations working to promote RoN in some way as well as five attributes. Attribute data collected includes information on the type of organization (Table 6), the type of activity they engage in (Table 7), the region where they primarily work (Table 8), and whether or not an organization's primary focus is advancing RoN (versus those who do not primarily focus on RoN, but occasionally partner with RoN organizations to promote RoN). The second dataset is a relational matrix measuring ties among members of the network.

For both datasets, my research assistants and I collected information in two complementary ways. The first method was a 17-question electronic survey sent to known RoN advocates designed to collect information on the above attributes and relational data. Given the global nature of the network, the survey and recruitment emails were sent in either English, Spanish, Portuguese, or French, depending on the respondent's home country. Since the total population of the global network was unknown, the survey employed snowball sampling and was conducted in waves. As first-wave respondents identified new partners, these organizations were added to the datasets and invited to take the survey. This process was repeated for six months until survey responses stopped.

Because the survey data was inevitably incomplete, we supplemented this by collecting observational data from publicly available sources. This includes organizational websites, program documents, press releases, news articles, as well as numerous phone and skype interviews. Where possible, I collected attribute data from organizational websites. For relational data, coded two organizations (network nodes) as having a tie if one acknowledged the other as a

partner on a project explicitly tied to RoN (e.g., a campaign to adopt a RoN legal provision, collaborating to hold a symposium to raise awareness, mobilizing public support, etc.), or if one organization is a member of another organization. Following the logic of snowball sampling, I continued collecting observational data until no new organizations were identified.

Type of Actors Working to Advance Rights of Nature

We identified 1,189 individuals and organizations that either self-identify as RoN advocates (i.e., their primary focus is advancing RoN) or are identified by RoN advocates as partners in projects to advance RoN (i.e., RoN is not their primary focus, but they occasionally partner with RoN advocates). I was able to collect attribute data on 1,159 of these individuals/organizations (see Tables 1-3 below).

Table 1 presents information on the type of actors (e.g., individuals and organizations) involved in RoN networks. In general, I treat organizations as network nodes. However, numerous survey respondents chose to identify as individuals rather than representatives of organizations. These include, for example, academics and lawyers who are personally active in RoN networks, but whose universities or law firms do not advocate for RoN. In such cases, I treat these individuals as nodes in the network. It is worth noting, however, that there are examples of university centers and organizations of lawyers that explicitly focus on RoN (e.g., Barry University's Center for Earth Jurisprudence, CELDF, and the Earth Law Center). In these cases, I list the organization as the network node. Consequently, the number of individual people involved in RoN is far greater than the 1,189 nodes we identified.

We categorized network nodes according to eight types:

- Individuals working independently (rather than as organizational representatives);
- Community organizations and NGOs mainly working domestically;
- International NGOs (e.g., IUCN) and international network hubs (e.g., Global Alliance for the Rights of Nature);
- Education and research institutions (e.g., universities and think tanks);
- Local governments (any subnational governmental entity, like a municipal council);
- National government;
- Inter-governmental Organization;
- Business or philanthropic organization.

Table 6 shows the number (and percentage) of each type of network node, showing the information for all actors (Total Group), only those self-identifying as focusing on rights of nature (RoN), and those identified by RoN actors as partners in their RoN activities.

Table 6: Actor Type

Actor Type	Total Group		RoN Focus Only		Partners Only	
	Number	Percentage	Number	Percentage	Number	Percentage
Individual	263	23%	166	39%	97	13%
Community Org or domestic NGO	421	36%	150	35%	271	37%
International NGO or network hub	99	8%	43	10%	56	8%
University or Think Tank	123	11%	29	7%	94	13%
Local Government	6	0.50%	2	0.50%	4	0.50%
National Government	19	1.5%	3	0.50%	16	2%
Inter-governmental Organization	21	2%	9	2%	12	1.50%
Business or Foundation	206	18%	28	6%	179	25%
Total	1159	100%	430	100%	729	100%

I also categorized nodes according to the type of activity they engage in when promoting RoN (see Table 7). Some individuals and organizations engage in activism to mobilize popular support, but they vary regarding whether they frame RoN in terms of environmental activism, indigenous rights activism, or community rights activism. Others engage in legal work, like drafting RoN laws and defending them in court. Others engage in education and research. Others work within government to adopt policy, and I distinguish between those who are elected officials, those who are bureaucrats in domestic government, and those who are employees of inter-governmental organizations. Finally, I identify those who incorporate RoN into some aspect of their business activity (I include philanthropic organizations in this group).

It is worth noting that organizations listed in the “business or foundation” group include a wide variety of businesses that support RoN groups, from media entities that raise awareness about RoN, to foundations (e.g., Rockefeller Brothers Fund) and companies (like Ben & Jerry’s) that provide support to RoN organizations.

Table 7: Activity Type

Activity	Total Group		RoN Focus Only		Partners Only	
	Number	Percent	Number	Percent	Number	Percent
Environmental Activism	370	32%	158	37%	212	29%
Indigenous Rights Activism	58	5%	21	5%	37	5%
Community Activism	225	19%	75	17%	150	20%
Legal Work	67	6%	30	7%	37	5%
Education & Research	310	27%	131	30%	179	25%
Elected Government Official	16	1%	3	1%	13	2%
Government Employee	15	1%	1	1%	14	2%
Inter-Governmental Org Employee	11	1%	2	0.50%	9	1%
Business or Foundation	87	8%	9	2%	78	11%
Total	1159	100%	430	100%	729	100%

Finally, I collected data on the region where individuals and organizations predominantly work, presented in Table 8. The US & Canada is the region with the most organizations, due in large part to the work of CELDF to mobilize a large grassroots network of community organizations. Europe and Latin America come in second. It is important to note that the electronic survey format makes it difficult to collect information in areas where internet access is less common. For this reason, it is likely that the results under-represent the amount of RoN activity in certain areas (e.g., parts of Africa, Latin America, and Asia) and among certain populations (particularly indigenous populations). The International category indicates organizations that have a truly international scope, like the UN Harmony with Nature Programme.

Table 8: Region

Region	Total Group		RoN Focus Only		Partners Only	
	Number	Percent	Number	Percent	Number	Percent
US & Canada	429	37%	172	40%	257	35%
Latin America	209	18%	88	20.50%	121	16%
Europe	292	25%	88	20.50%	204	28%
Asia	42	3.50%	14	3%	28	4%
Middle East & North Africa	17	1.50%	2	0.50%	15	2%
Sub-Saharan Africa	54	5%	19	5%	35	5%
Australia & New Zealand	36	3%	16	3.5%	20	3%
International	80	7%	31	7%	49	7%
Total	1159	100%	430	100%	729	100%

Structure of the Overall Network

I was able to collect relational data (regarding who is connected to who) for 884 nodes in the network. The smaller sample is because I was unable to find information about some organizations online and some survey respondents chose to provide attribute data but not information about their partnerships. Nevertheless, I believe that the collected network data constitutes a representative sample, both because it includes 76 percent of the entire population of identified RoN organizations, and because it is likely that the most active members of the network have some online presence, and thus are included.

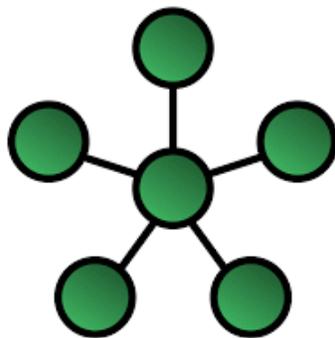
There is a single, global RoN network that connects all nodes, albeit through many indirect connections. However, the global RoN network is quite fragmented (breadth = 0.778)⁷ and has extremely low density; its density score is .003, meaning 0.3 percent of all possible ties in the network are present. In other words, while the overall network is quite large, most nodes (individuals or organizations) are only connected to one or a few other nodes in the network. The network's average degree is 2.5, meaning nodes have on average ties with two to three other nodes. However, there is much variation in the number of ties, with a few nodes having more than a hundred ties each, and many nodes having just one.

⁷ Breadth is an inverse measure of cohesion. The closer to 0, the more cohesive the network. The closer to 1, the more fragmented the network.

Another way to think about a network is to see how close nodes are together, measured by the average geodesic distance between all nodes in the network. Average distance measures the number of ties (on average) that exist on the shortest possible path connecting one node to another (akin to the “six degrees of separation” phenomenon). The RoN network’s average distance is 3.35. This means that on average, the shortest path between two nodes in the network involves three to four degrees of separation (connections). Calculating the frequencies of geodesic distances shows that 72 percent of all nodes in the network are indirectly connected at a distance of three or four ties (three to four degrees of separation). Only 18 percent of nodes are connected more directly (one to two degrees of separation). Ten percent of nodes are more distantly connected with five to seven degrees of separation. Seven connections is the maximum distance between any two connected nodes (i.e., the network’s diameter).

In many ways, the global RoN network resembles a classic “star” network, but with some important caveats that I explain below. A pure “star” network is one where all nodes are directly connected to a central node, but not connected to one another (see Figure 1). Two key indicators of a star network are efficiency and least upper bound scores close to 1. Efficiency measures the extent to which actors have a single tie (an in-degree of one). Least upper bound measures the extent to which each pair of actors involves a common actor with directed ties to all other actors. The RoN network has an efficiency score of 0.99 and a least upper bound score of 0.99, indicating a shape resembling a star network.

Figure 1: Pure Star Network

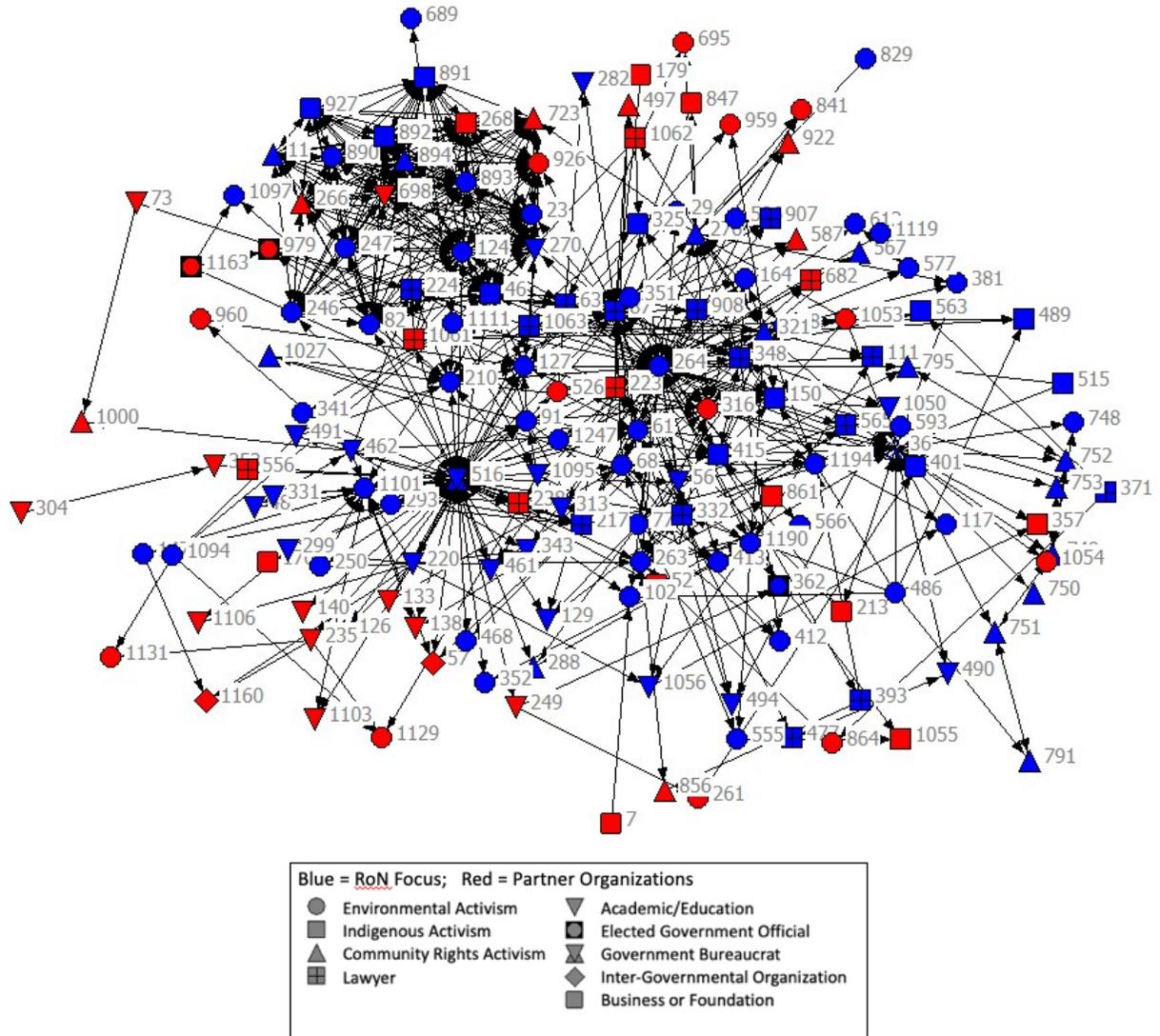


Rather than a pure star network, however, the global RoN network is better described as having a smaller core network of actors that are more densely connected, with numerous nodes on the periphery that have single ties to one member of the core network. The vast majority of nodes in the global RoN network (724 out of 884) are “pendants,” or nodes connected to a network by only one tie. This explains the very low density of the overall network, as well as indications of a star-shaped network. Removing these pendants from the analysis reveals a core network of 160 nodes that is much more dense and cohesive (see Figure 2). In essence, the core resembles the center of a star network that has 724 pendants.

The density of the core network is .04, meaning four percent of all possible ties are present. This is more than 10 times the density of the overall network and reasonably dense for a large network of 160 nodes. The core network’s average degree is 6.15, meaning nodes have on average ties with more than six other nodes (compared to 2.5 in the overall network). The

average distance between nodes is also shorter in the core network than the overall network (2.8 compared to 3.35). In sum, the core is a denser, more cohesive network than the overall network.

Figure 2: Core RoN Network (Pendants Removed)



As Figure 2 shows, the core network (like the overall network) includes organizations involved in all types of activities. More interesting is the distribution of RoN Focused organizations and Partner Organizations. The vast majority (68%) of core network members are organizations that focus on RoN (colored blue). By contrast, the vast majority (72%) of the pendants in the overall network are partner organizations. It is also worth noting that many of the partner organizations in the core network (colored red) have significant informal ties to RoN focused organizations, helping to explain the relative density of their network ties (placing them in the core network). For example, the Leonardo DiCaprio Foundation (whose focus is not explicitly on RoN) has informal ties to many RoN organizations via Linda Sheehan, who was the Foundation’s Senior Council at the time the network data was collected, but also is a founding member of the Global

Alliance for the Rights of Nature, the former director of the Earth Law Center, and a member of the UN Harmony with Nature Network. Similarly, the Indigenous Peoples of Africa Coordinating Committee has strong ties to the core RoN network due to its work with many members of the African Earth Jurisprudence network (described below) on projects to recover ancestral knowledge.

In sum, the network structure shows that over the last decade a sizeable number (more than 100) RoN focused organizations have formed a dense and cohesive transnational network dedicated to promoting RoN legal provisions globally. This core is surrounded by a very large number of pendants (nearly five times the number of core network members), dominated by partner organizations that sit on the periphery of the global network. I argue this suggests that after a decade of mobilization and network activation among RoN focused organizations, these organizations are now expanding their network and mainstreaming the concept of RoN by building partnerships with organizations who do not focus explicitly on RoN. This likely partially explains the recent increase in RoN legal provisions.

Central Nodes in the Network

One way to think about influential nodes in the network is to examine which ones are the most central. Given the fragmented nature and star-shape of the overall RoN network, I measure centrality as “betweenness” (i.e., which actors most often lie on the geodesic paths between other pairs of actors who otherwise would not be connected). Organizations with the highest centrality scores are the ones that most other organizations depend on to make connections with other organizations. In this sense, these nodes can be seen as key brokers. Table 9 lists the 14 most central organizations (those with betweenness scores falling in the top 99th percentile).

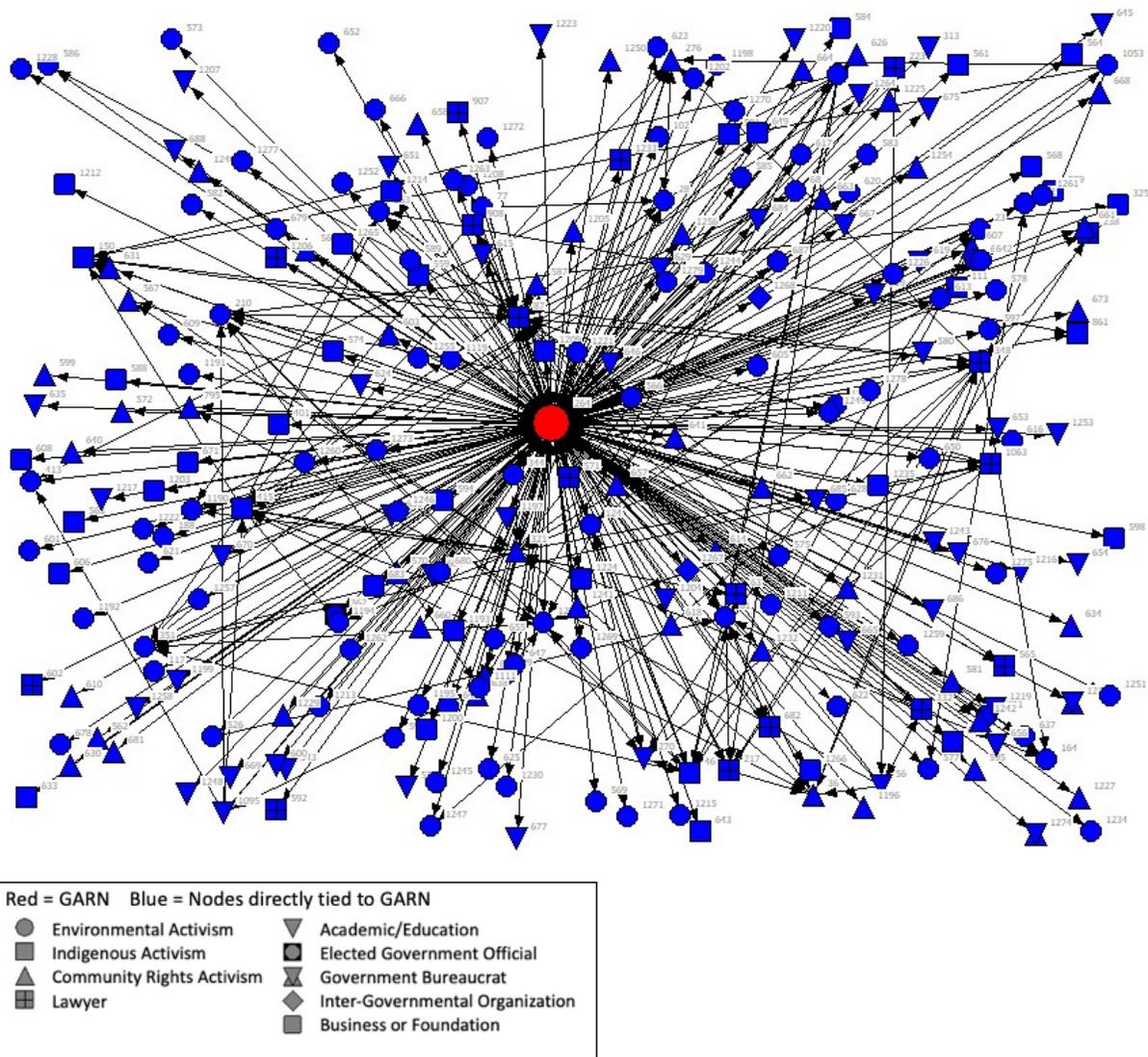
Table 9: Most Central Nodes in RoN Network

Node ID	Organization	Centrality Score ⁸
264	Global Alliance for the Rights of Nature (GARN)	331,069
516	United Nations Harmony with Nature	125,934
36	Community Environmental Legal Defense Fund (CELDF)	105,194
276	Women’s Earth & Climate Action Network (WECAN)	96,386
127	End Ecocide on Earth	79,853
87	Earth Law Center	62,936
263	CEDENMA	52,428
321	Movement Rights	25,369
751	Ohio Community Rights Network	23,167
348	Center for Earth Jurisprudence	20,871
68	Derechos de la Madre Tierra Mexico	20,106
61	Australian Earth Laws Alliance	19,673
46	The Gaia Foundation	15,602
210	Nature’s Rights- Scotland	15,419

⁸ Calculated as Freeman’s approach to betweenness (Hanneman & Riddle 2005, 163). Mean = 1413; standard deviation = 13,542.

By far the most central node is the Global Alliance for the Rights of Nature (GARN). GARN has the most number of direct ties of any node in the network, and is tied to organizations engaged in all types of activities (see Figure 3). This is not surprising given that GARN was one of the first global network hubs created specifically to promote RoN, and so has had the most time to expand and consolidate. GARN was founded in September 2010 at an international conference held in Quito, Ecuador, by a diverse group of activists seeking to build momentum following the inclusion of RoN in Ecuador’s 2008 constitution and the 2010 Universal Declaration of the Rights of Mother Earth, which was adopted by citizen activists at the People’s Conference on Climate Change and the Rights of Mother Earth, held in Cochabamba, Bolivia, in April 2010.

Figure 3: GARN Ego Network

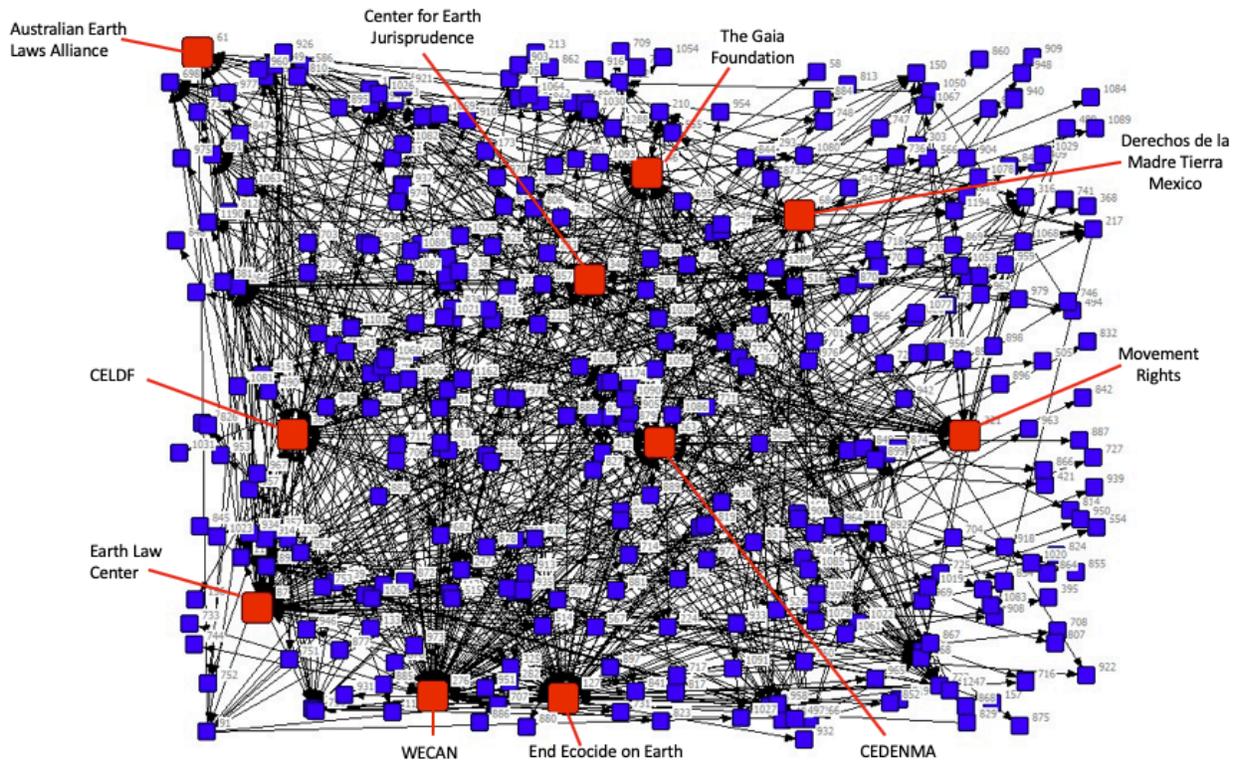


As an alliance, GARN is probably best understood as a hub connecting various networks of environmental and human rights activists, Indigenous rights activists, community rights activists, lawyers, scientists, academics and others. Eight of the other central nodes listed in Table 9 have

representatives currently serving on GARN’s Executive Committee (WECAN, End Ecocide on Earth, Earth Law Center, CEDENMA, Movement Rights, Center for Earth Jurisprudence, Australian Earth Laws Alliance, and the Gaia Foundation). Two others—CELDF and Derechos de la Madre Tierra Mexico—are members of GARN.

The fact that so many GARN members are themselves highly central nodes in the global RoN network begins to explain the network’s star-shaped pattern. Each of these GARN members sit at the center of distinct networks of environmental NGOs (e.g., End Ecocide and CEDENMA), community rights organizations (e.g., CELDF and Movement Rights), women’s rights and ecofeminist organizations (e.g., WECAN), Indigenous organizations (e.g., Movement Rights, Gaia Foundation, WECAN, and Derechos de la Madre Tierra Mexico), and environmental lawyers (e.g., Earth Law Center, CELDF, Center for Earth Jurisprudence, and Australian Earth Laws Alliance). Through their own connections as members of GARN, these central nodes create a dense network that begins to form the core of the global RoN network (see Figure 4).

Figure 4: Ego Networks for Central GARN Members



UN Harmony with Nature Network

The second most central node in the global RoN network is the UN Harmony with Nature Programme. The Harmony with Nature Programme is one of the most truly global hubs in the network. It not only includes members from every continent, but it also includes leading members from each of the above networks. In this way, it serves as a connecting node for other more regionally-based networks (discussed below). It is also a prime example of how RoN

advocates have used network construction to advance RoN norms within formal global governance institutions.

The UN Harmony with Nature Programme emerged out of efforts by RoN advocates to insert RoN into international discussions regarding sustainable development. RoN networks mobilized at the 2012 UN Conference on Sustainable Development in Rio de Janeiro (Rio+20), where the Global Alliance for the Rights of Nature and partner Global Exchange hosted a panel advocating making RoN “the foundation of sustainability” (GARN 2012). Sympathetic governments, led by Ecuador and Bolivia, pushed to incorporate RoN into the discussion at the Rio+20 summit. Ecuador had laid the groundwork the previous February, when Environment Ministers from the Community of Latin American and Caribbean States (CELAC) met in Quito to develop a common platform in advance of the Rio+20 summit. At Ecuador’s urging, CELAC members committed “to discussing [at the Rio+20 summit] a universal declaration of the rights of nature as an instrument for achieving [sustainable development]” (CELAC 2012, Art. 18). At the summit, Ecuador, Bolivia, Costa Rica, and Paraguay together called for the UN to include RoN in the final agreement. While this did not occur, Ecuadorian delegates did place RoN within the agreed upon outcomes by insisting on the inclusion of Articles 39-40 in the final document. Articles 39-40 state:

We recognize that the planet Earth and its ecosystems are our home and that Mother Earth is a common expression in a number of countries and regions and we note that some countries recognize the rights of nature in the context of the promotion of sustainable development. We are convinced that in order to achieve a just balance among the economic, social and environment needs of present and future generations, it is necessary to promote harmony with nature. We call for holistic and integrated approaches to sustainable development which will guide humanity to live in harmony with nature and lead to efforts to restore the health and integrity of the Earth's ecosystem (United Nations General Assembly 2012b).

In addition to leading the campaign for the UN to adopt a Universal Declaration of the Rights of Nature, the Bolivian and Ecuadorian governments helped establish the Harmony with Nature Programme within the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs. The UN Harmony with Nature Programme provides an institutional basis for promoting RoN, and Earth Jurisprudence more generally, within the UN system.

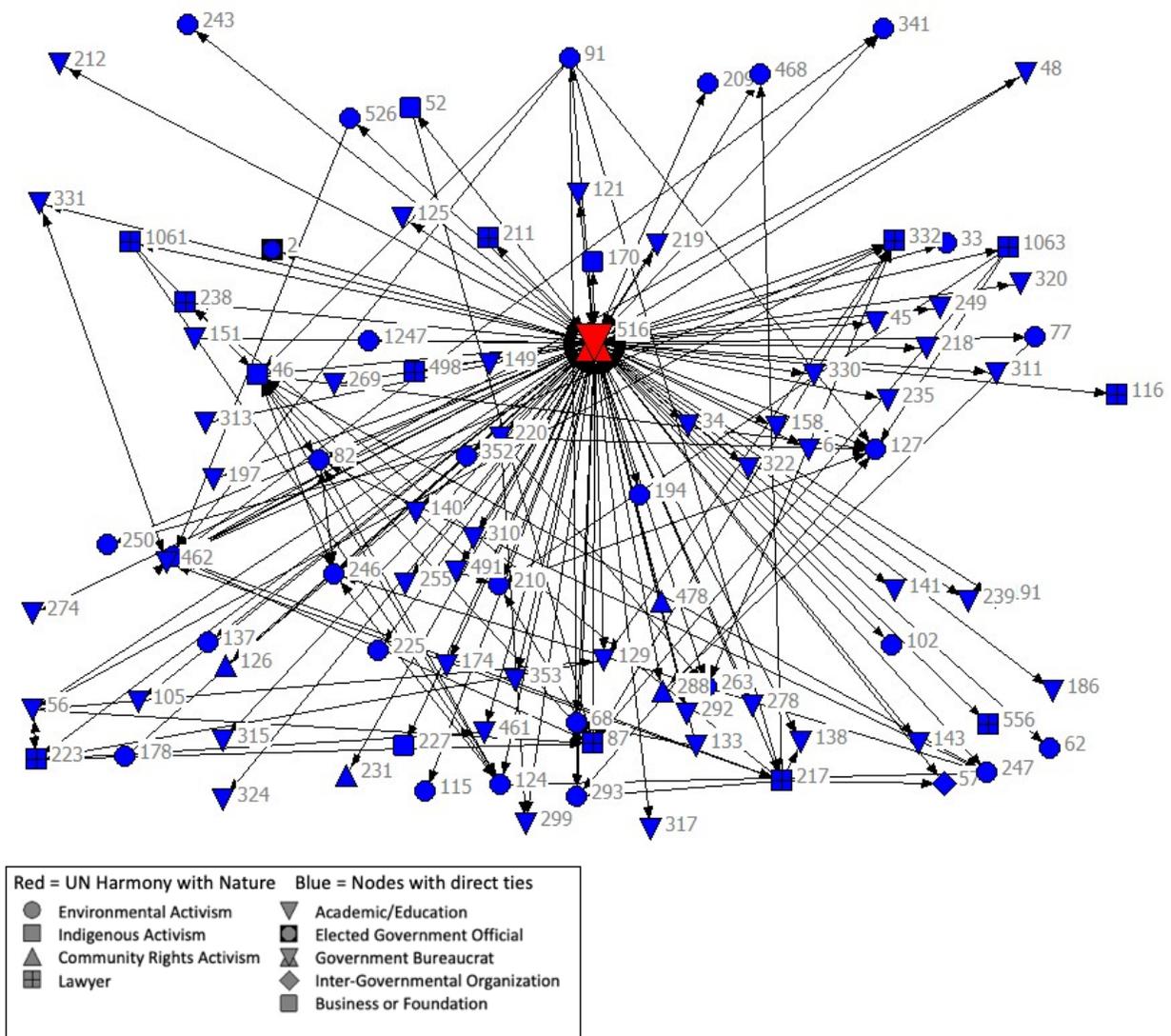
On International Mother Earth Day each year since 2011, the program has organized inter-governmental dialogues in the UN General Assembly on how to implement Earth-centered principles for sustainable development in harmony with nature, particularly through RoN. The Programme invites scholars, scientists, activists, and leaders of Member States to report on the “evolving relationship of humankind with nature” (UN General Assembly 2012a, 1). One effect of this program has been to produce annual UN General Assembly Resolutions and Secretary General reports that help construct and strengthen global RoN norms.⁹ In December 2015, three months after the UN General Assembly passed Resolution 70/1 *Transforming our World: the 2030 Agenda for Sustainable Development*, the UN General Assembly adopted a resolution (A/RES/70/208) calling for the creation of a UN Knowledge Network on Harmony with Nature.

⁹ Available at <http://www.harmonywithnatureun.org/unDocs/>.

The Knowledge Network is “an online platform of practitioners, academics and researchers dedicated to strengthening interdisciplinary collaborations to advance a non-anthropocentric, or Earth-centered worldview.”¹⁰ The network’s purpose is “to increase the availability of tools and resources rooted in human-Earth interconnectedness to inform policy makers and urge societies across continents to reconsider how they interact with the natural world.”¹¹

At the time of writing, the Knowledge Network connected 109 experts from every continent. The network has been a crucial node for incorporating scientists and academics into the global RoN network. As Figure 5 shows, a majority of network members are scientists, academics, researchers and lawyers (denoted by upside down triangles and boxes with crosses).

Figure 5: UN Harmony with Nature Ego Network



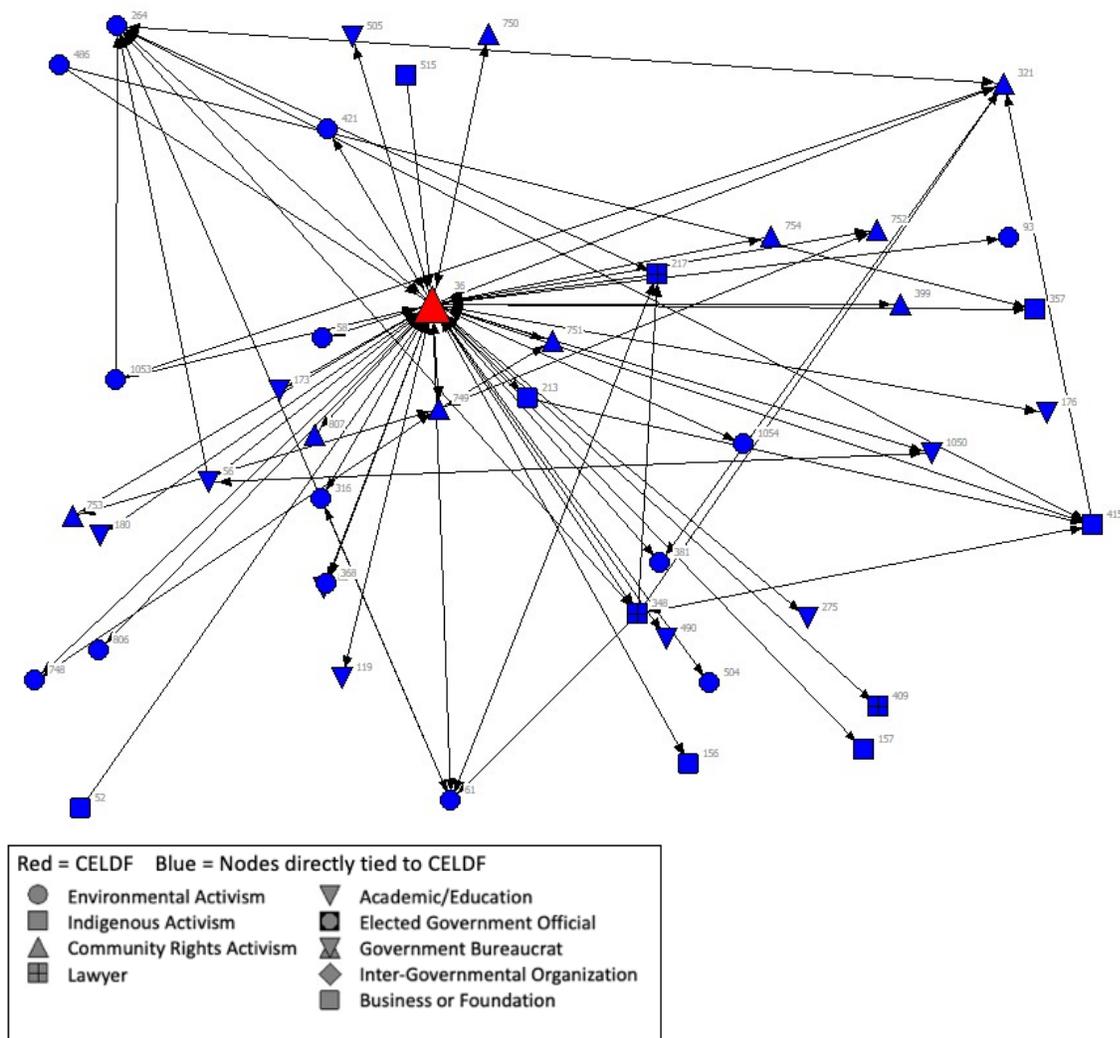
¹⁰ <http://www.harmonywithnatureun.org/welcome/>.

¹¹ <http://www.harmonywithnatureun.org/welcome/>.

Community Environmental Legal Defense Fund

The third most central node in the network is the Community Environmental Legal Defense Fund (CELDF). While CELDF does partner with organizations to develop RoN legal provisions outside the U.S., its high degree of centrality results from the fact that it has spent more than a decade constructing a network of grassroots organizations dedicated to promoting community rights and RoN at the local level in the U.S. The U.S. network is decentralized, with community-level organizations connected to state-level organizations, which in turn coordinate with CELDF.¹² Consequently, CELDF sits at the center of this U.S.-based network and connects it to global hubs like GARN and the UN Harmony with Nature Programme.¹³

Figure 6: CELDF Ego Network



¹² State level community-rights/RoN organizations exist in Colorado, New Hampshire, New Mexico, Ohio, Oregon, Pennsylvania, and Washington.

¹³ Note that Figure 6 shows CELDF's direct connections with state-level community rights organizations, but not the myriad grassroots organizations who are indirectly connected to CELDF via the state-level organizations.

CELDF has taken a bottom-up approach to network construction, complementing the more top-down approach of other network members, like the UN Harmony with Nature Programme or Nature's Rights, which promotes RoN within the European Union. CELDF is mainly comprised of lawyers who train and support community activists who advance local ballot initiatives recognizing community rights and RoN across the U.S. Believing that the political opportunity structures in both national and state legislatures are closed, CELDF has chosen to instead appeal directly to voters. At the time of writing, nearly 50 ballot measures recognizing RoN had passed, and dozens more were pending. It is worth noting that none of these ballot measures have withstood legal challenges in U.S. courts. Nevertheless, CELDF has clearly played an important role in raising awareness and mobilizing citizen support for RoN across the U.S.

Linking Organizations

Other nodes in the network are influential (and have high centrality scores) because they serve as go-betweens, or “brokers,” between particularly central nodes with a lot of ties. A prime example is the Australian Earth Law Alliance. Dr. Michelle Maloney, the Co-Founder and National Convener of the Australian Earth Law Alliance, holds leadership positions within every large, central hub of the global RoN network. She is a member of GARN's Executive Committee, a member of the UN Knowledge Network on Harmony with Nature, and the Steering group for the Ecological Law and Governance Association (ELGA). ELGA a more recent network hub that is rapidly growing in influence, and will likely gain a more central place in the network in future years. ELGA was formed in October 2017 by members of the IUCN's World Commission on Environmental Law, and is heavily populated by lawyers and academics. The Australian Earth Law Alliance has also partnered with CELDF on a campaign to secure rights of nature for Australia's Great Barrier Reef. Consequently, the Australian Earth Law Alliance is one of a few nodes that connects the main hubs in the global network, making it a key broker.

Cutpoints in the Network

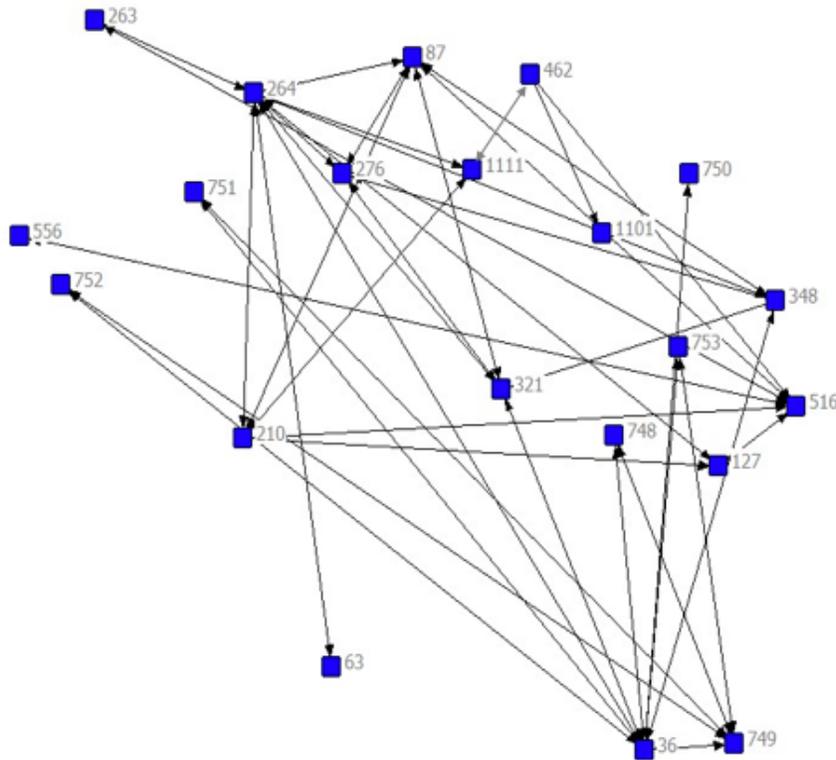
Given the global RoN network's star-like shape and fragmentation, cutpoints provide another way to think of which nodes are important. Cutpoints are parts of the network that would become disconnected components if one node were removed. There are 21 cutpoints (nodes that would have to be removed in order for one actor to no longer be able to reach another). If these 21 nodes were removed the RoN network would be divided into 526 “blocks” or separate components.

Table 10 identifies these 21 cutpoint nodes and their corresponding ID numbers to locate them in Figure 7, which shows that these 21 nodes are connected into a cohesive network. Given this, and their status as cutpoints, these nodes can be considered a different kind of “core” of the overall network.

Table 10: Cutpoint Nodes

ID#	Node Name
36	CELDF (Community Environmental Legal Defense Fund)
63	Enact International
87	Earth Law Center
127	End Ecocide on Earth
210	Nature's Rights-Scotland
263	CEDENMA (Ecuador)
264	Global Alliance for the Rights of Nature
276	WECAN
321	Movement Rights
348	Center for Earth Jurisprudence
462	ELGA (Ecological Law and Governance Association)
516	United Nations Harmony with Nature Programme
556	Gabriella Eslava, Dejusticia (Colombia)
748	Colorado Community Rights Network
749	New Hampshire Community Rights Network
750	New Mexico Coalition for Community Rights
751	Ohio Community Rights Network
752	Oregon Community Rights Network
753	Pennsylvania Community Rights Network
1101	Earth Trusteeship
1111	Nature Rights (France)

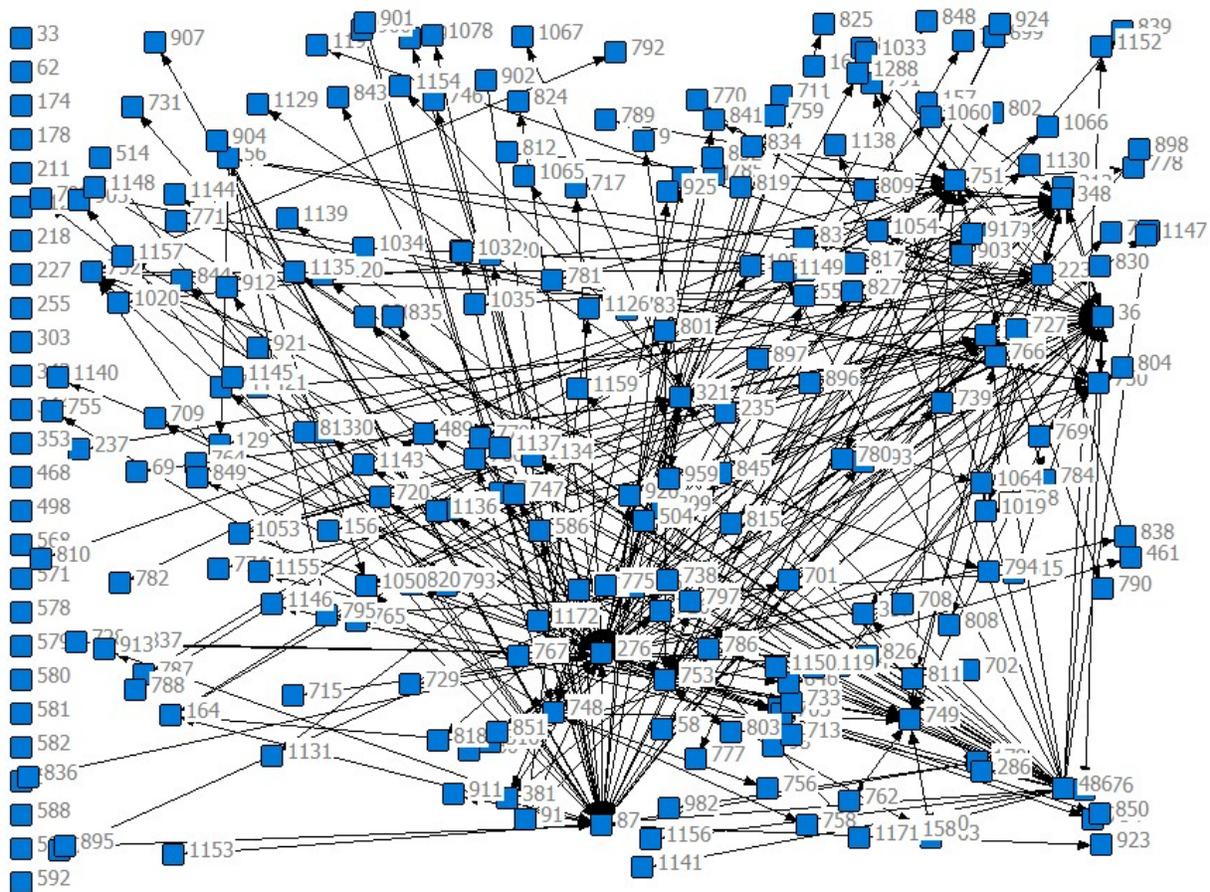
Figure 7: Cutpoint Node Network



Regional Networks

RoN networks have consolidated to different degrees in different regions. North America is the region with the most cohesive and dense regional network. Figure 8 shows ties among RoN organizations based in North America. Isolated nodes on the left indicate organizations who are only tied to organizations outside North America. North America is one of the few regions where RoN organizations are clustered regionally; ties within the region are nearly double the number of ties with organizations from other regions.¹⁴ Much of this is due to the CELDF (#36) network discussed above, but there are also important regional networks centered around WECAN (#276), the Earth Law Center (#87), and the Center for Earth Jurisprudence (#348).

Figure 8: North American RoN Network



¹⁴ Regional clustering for all regions was determined by calculating Krackhardt and Stern's E-I (external-internal) Index using UCInet software (Krackhardt and Stern 1988).

Figure 9 shows ties among RoN network members based in Latin America (again, isolates on the left indicate organizations that only have ties to organizations based in other regions). There is a slight tendency towards regional clustering, with internal ties slightly outnumbering external ties. Latin America's RoN network is characterized by a series of clusters that are connected by a series of linking nodes. This pattern reflects relatively recent efforts to consolidate a Latin American RoN network. These efforts gained strength at the International Rights of Nature Symposium held in Quito in September 2018 to commemorate the 10th anniversary of Ecuador's pioneering constitution, the first to recognize RoN. The symposium was sponsored by GARN and featured a strategy session by GARN leaders to discuss ways to strengthen the network. During this symposium, many Latin American organizations began working to create a Latin American hub within GARN.

Figure 9: Latin American RoN Network

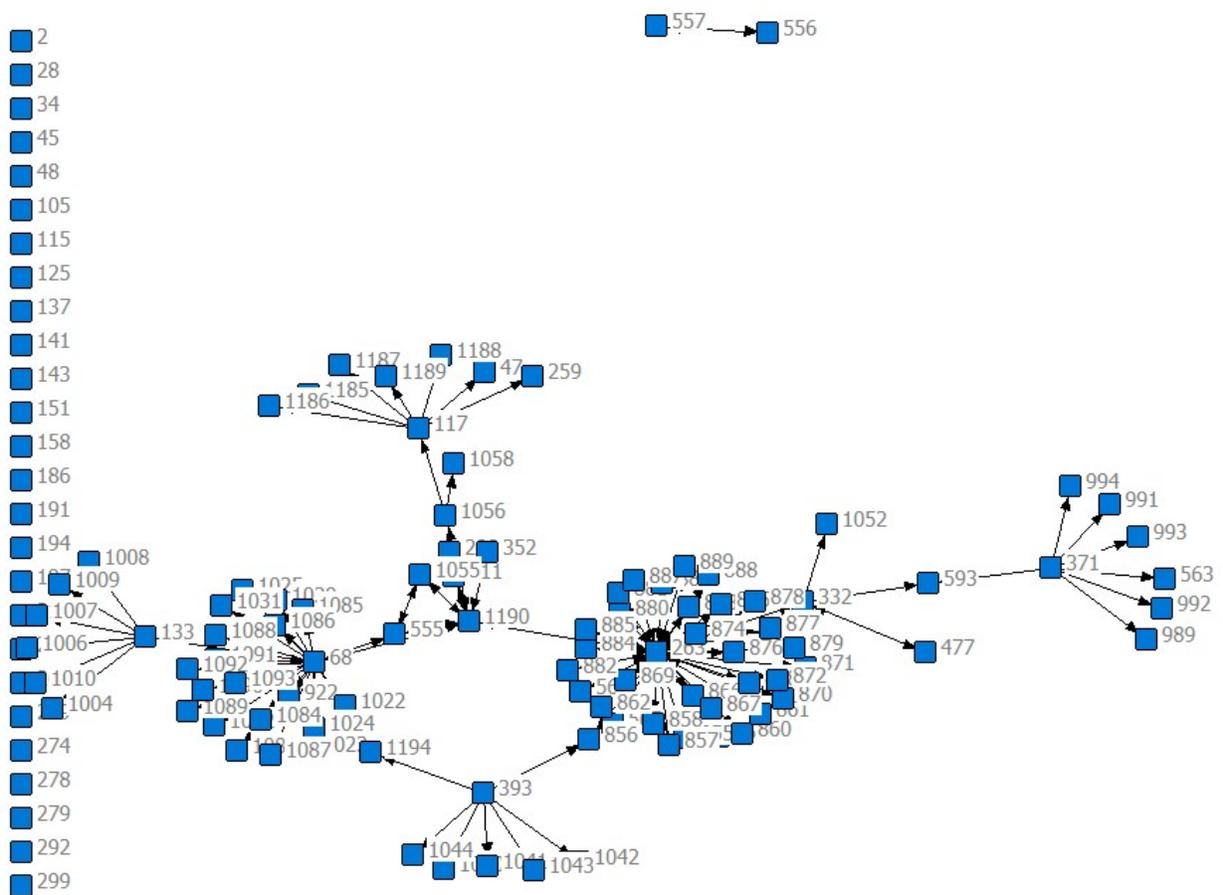


Figure 9 shows that the Latin American RoN network is centered on GARN (the main cluster in the center of the graph), but is connected to various other regional clusters through linking organizations like Derechos de la Madre Tierra (Mexico) and Alianza por los Derechos de la Madre Tierra Colombia. The smaller clusters in the graph mainly represent groups of Ecuadorian environmental and Indigenous groups, linked through environmental NGOs like Acción Ecológica and legal organizations like the Centro Ecuatoriano de Derecho Ambiental

The collected data shows virtually no regional clustering to date in the remaining regions — Australia/New Zealand, Asia, and the Middle East/North Africa (see Figures 12-14). This of course does not mean that no intra-region ties exist, but rather that we were unable to obtain any evidence of such ties. I acknowledge that our picture of these regions is likely incomplete, particularly in Australia where the Australian Earth Law Alliance has programs to work with Australian communities to raise awareness and support for RoN. More research is needed to more completely map Australia’s domestic RoN network.

In each of these remaining regions, the preponderance of ties are with organizations and individuals based in other regions. In the case of Australia and New Zealand, this may largely be due to the fact that they are a region of two countries with a relatively small number of RoN organizations. Australian and New Zealand nodes have extensive connections to the global RoN network. As noted above, the Australian Earth Law Alliance is a key linking node connecting major hubs in the network. Many other nodes based in Australia include independent academics and researchers tied to global networks, but who do not partner extensively with domestic RoN NGOs.

It is much more difficult to interpret the lack of regional clustering in Asia and the Middle East seen in Figures 13-14. It could be due to a lack of data. Or, it may be that the topic of RoN is relatively new in these regions and organizing around RoN simply has not yet developed to the same degree as other regions. Based on several years of qualitative research on the global RoN movement, I suspect it is the latter.

Figure 12: Australian & New Zealand Network

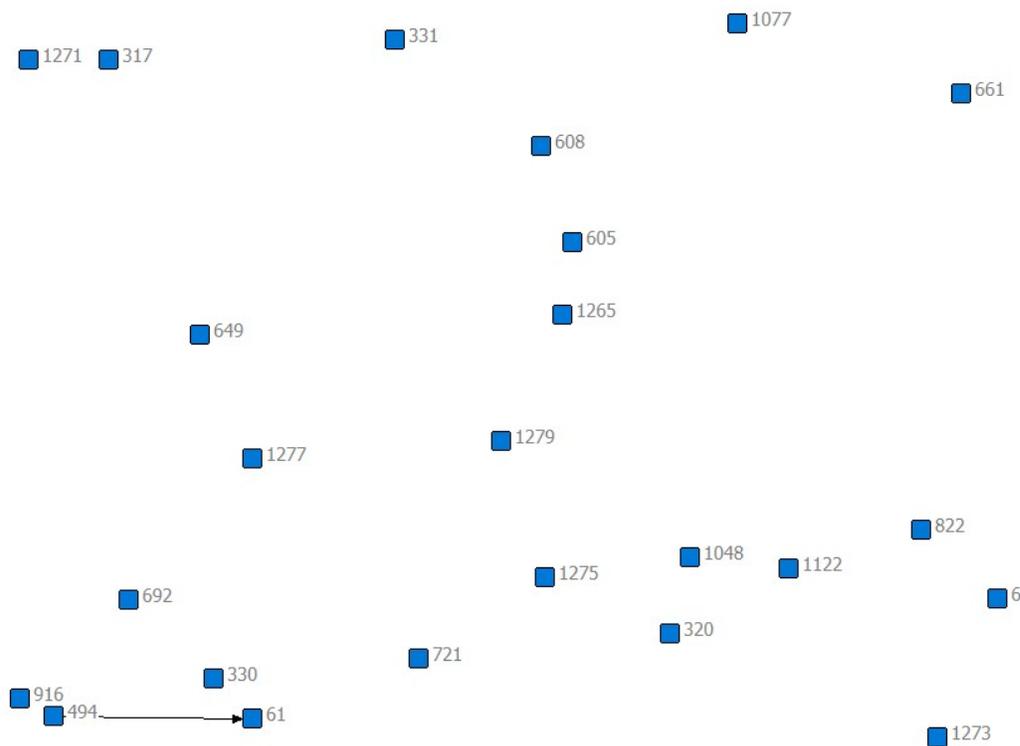
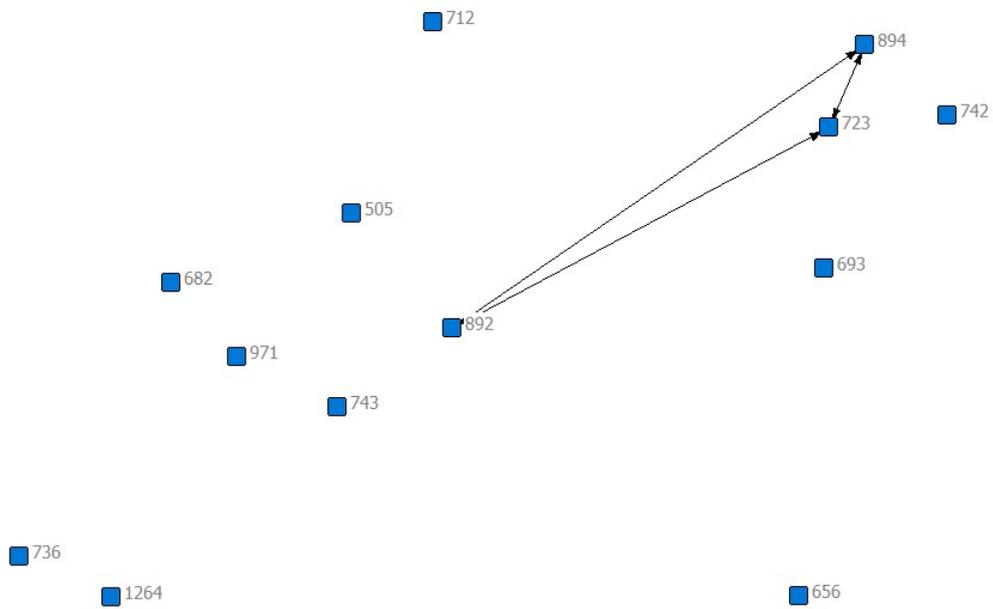


Figure 13: Asian Network



Figure 14: Middle East and North African Network



Clustering by Node Type, Activity Type, and RoN Focus

I similarly looked for evidence of clustering by node type, activity type, and RoN focus.¹⁵ There is no evidence that members of the RoN network tend to work mostly with similar types of organizations or those that engage in the same types of activity. At the network level, most ties are between nodes of different types who engage in different types of activities. However, there is evidence that organizations focusing specifically on RoN do tend to cluster more with other RoN-focused organizations. They of course also have ties with partner organizations not focusing specifically on RoN, but these ties are not dense. Again, I argue that this shows some success among RoN organizations in broadening the network by mainstreaming RoN as a concept. However, RoN-focused organizations have more internal ties with other RoN-focused organizations, creating a denser internal network.

Conclusion

In sum, the network data suggests that the global RoN network is truly an alliance of many different types of actors engaged in many different types of activities that operate in a very ‘loose’ (not dense) network. Most actors do not have direct ties with most other actors, but their ties cross categories of node type, activity type, and often region.

Arguably, a strength of this networked governance system is that it combines the particular resources, skills, and authority of many different kinds of organizations and directs these to simultaneously promote system change in all different kinds of policy arenas at every level of governance (local, national, and international). Some organizations take a bottom-up approach, working with local communities to advance local RoN laws. For example, CELDF holds “Democracy Schools” to train citizens across the US in Earth Jurisprudence and to mobilize citizens to launch ballot initiatives to pass municipal ordinances recognizing RoN. The Gaia Foundation similarly trains civil society and community leaders in Africa. The Earth Law Center, Earth Law Alliance and others train lawyers and judges to advance RoN through the courts. Others, like Movement Rights and the HoChunk Rights of Nature Workgroup promote RoN among Indigenous and other grassroots activists. The organization Nature’s Rights is working to incorporate RoN into the EU system. End Ecocide and others are working to amend the Rome Statue to add ecocide (i.e., serious violations of RoN) to the list of crimes that could be brought to the International Criminal Court. And, as noted above, various organizations are working to strengthen RoN within the UN system. The Ecological Law and Governance Association, GARN, and others hold regular webinars to raise public awareness. Linda Sheehan, the former lead council for the Leonardo Di Caprio Foundation, has played a key role in bringing philanthropic organizations into the Earth Jurisprudence movement.

The structure of the global RoN network maps quite closely onto the geography of where RoN legal provisions exist. The relative density and cohesiveness of RoN networks in North America and Latin America doubtless helps explain why the vast majority of existing and pending RoN legal provisions are located in these regions (see Tables 2 and 3). These are driven by social

¹⁵ All evidence of clustering was calculated using Krackhardt and Stern’s E-I (external-internal) Index (Krackhardt and Stern 1988).

mobilization and pressure. It is also not surprising that cases from Africa and Europe have contributed to the surge in legal provisions since 2017, given the network construction underway. There are of course a number of high-profile legal provisions in Asia (e.g., court rulings in India and Bangladesh recognizing RoN). However, these appear to result from external influences (e.g., judges learning from courts in other countries) rather than concerted pressure from domestic movements (Kauffman and Martin Forthcoming). Similarly, laws in New Zealand recognizing ecosystems as legal persons resulted from unique conditions surrounding treaty settlements between the Crown government and Maori iwi, and did not result from pressure by RoN advocates (Kauffman and Martin 2018). The strong correlation between the shape of the RoN network and the trajectory of RoN legal provisions suggests that network construction is at least partially contributing to the dramatic recent rise in RoN legal provisions.

Admittedly, this social network analysis only captures a snapshot in time, and a blurry one at that. It does not capture the full number of RoN organizations and their ties, and cannot fully demonstrate the dynamic movement that is growing across the globe to promote RoN as a tool for reforming human systems (legal, governance, economic, etc.) to be more ecologically sustainable. However, it is the best complete image we have, and I believe it represents reasonably accurately the true shape of this important new global movement. It shows that an informal global governance system is being constructed by citizens disillusioned by the failure of governments to take stronger actions to address the dual crises of climate change and biodiversity loss. Faced with the reality that existing rules largely fail to promote ecological sustainability, they are working to change the rules in various policy arenas at local, national, and international levels. This networked governance system developed first in North America and Latin America, and so has consolidate most there. But it has grown to include every region of the world. The strengthening of RoN networks in Europe and Africa suggest that the global RoN network will likely continue to expand and consolidate, and perhaps provide an example for strengthening regional networks in Asia and the Middle East.

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